

MACHINE AS A LEARNING TOOL IN SMART EDUCATION

DR. DEEPA ROY & JOYITA MITRA

SACT-1 & Assistant Professor Department Of Education, Kishore Bharati Bhagini Nivedita College (CO-ED), University of Calcutta, Kolkata, India

ABSTRACT

The expression of Smart Education is used to describe the technological enhancement & progressiveness of the sector of education that should deal with identifying the most suitable, relevant & enlighten technology for serving the educational requirements & purpose of the students. The nature of the learning process in Machine Learning has been utilizing the system technology for fulfillment the procedure & product of education in different span of information detecting gadgets. Machine learning is the type of learning carried out, facilitated, or supported by the same or other device, media, or resources. The tool is facilitated & compares the learning model & artificial intelligence due to the suitable & preferable educational environment that should be enhanced the quality of education & betterment students' qualities. Although there have been various improvements, according to today's perspective, educational technology should become much more tailored to the learner and promote a better style of learning, as well as allowing physical and virtual items to communicate effectively thanks to the Internet of Things.

KEYWORDS: Machine Learning, Smart Education, IOT & Smart Classroom

Received: Aug 24, 2021; **Accepted:** Sep 14, 2021; **Published:** Nov 23, 2021; **Paper Id.:** IJESRDEC202115

1. INTRODUCTION

Now a day science and technology is an important theme based working in such an environment where the education system is very strong going upwards or in a developing situation with the emerging trends. The technological approaches have expressed the incentive of a tendency to understudy the accomplishment of various components that should motivate & eventual fate of evaluation and the changing ideal models of learning facilities. Therefore, the technology is required for advancements in the Internet of Things (IoT) that should integrate the Artificial Intelligence & to support the Virtual Reality that is connected via the device for learning, becomes of potential education. The involvement of artificial intelligence in machine learning helps the learner to take very wise descriptions & quality resources. M-learning (machine learning) authorizes the objectives of education, such as students are connecting the online model to the library, lectures, materials, assessments, evaluation & also various administrative works in a wide area of the virtual platforms.

Machine tools support a constructive approach of smart education that students are discovered & construct knowledge as opposed to acquired. The term 'Smart Education' correlates with the concept of Artificial Intelligence, IoT & Machine Learning should help to obtain the sharing informative knowledge via internet & contribute the upload knowledge also. In this new approach teachers also embraces the new strategies & should provide an infrastructure to support the construction rather than the transfer of knowledge. The machine as a tool to support the Internet of Things (IoT) should provide a vast platform for teachers and students with a wide range of learning gadgets and objects. The Internet of Things (IoT) can be used in smart education in a variety of ways,

including classrooms and e-learning in e-classes.

2. REVIEW OF LITERATURE

- Berg, 2017;. We are not relying on any oracular abilities or exercises in futuristic imagination to answer this question. Rather, in this study, we examine how far computational techniques and methodologies that fall under the evocative umbrella of "Machine Learning" (ML) have been employed and documented in the specialised literature with reference to musculoskeletal disorders and related health conditions.
- Emanuel and Obermeyer, 2016. In the medical field, this means being able to predict a diagnostic label (as in diagnosis), an outcome level (as in prognosis, assessment, and monitoring), an exam value or risk score (as in regression) given a set of radiological images from a Picture Archiving and Communication System (FPACS), lab results from a Laboratory Information System (LIS), or data extracted from Electronic Medical Records (EMR), sensor networks, or specialty electronic registries, for example, given a set of radio
- Students, professors, and physical and virtual things can interact successfully and efficiently with IOT, according to Marquez, Villanueva, Solarte, and Garcia (2015) in "IOT in education: Integration of objects with virtual academic communities."

3. OBJECTIVE OF THE STUDY

Machine learning is not only the anyother way of implementation of traditional teaching, it's a new era of the educational environment. The study focus on the new trends are being emerged to provide a good impact on learning techniques to the learner. It helps to get an access to a world class leaning platform & due to their quality education. The study highlights the machine as a super fast technological tool that should be imposed a device generated image for a user view of the real world. It is really a great boon technology for learning style & becomes of smart education. The purpose of this study to find out the qualitative & comprehensive information share via a device that should help the learning style as well as learning skill rather than the smart work in the field of education through the base on IoT.

4. RESEARCH METHODOLOGY

Nowadays, technology-based educational programmes rely largely on the internet and web services supplied by computers; nevertheless, these are not interchangeable, but rather complimentary.. The technological orientation of machine learning is enormous & growing with a very rapid pace. Some of the emerging trends of machine learning are mobile learning, IOT, adaptive e-learning, Artifificial Intelligenctalong with others. All these new eras help learners to get access to a world class learning experience. The research adopts the learning model & an integrated concept of smart education that should provide high tech education.

The study is based on qualitative research components that should adopt the new 'Smart Education' idea. That is directly linked to the Smart Learning Environment, a sort of evolution or deeper look at virtual learning environments (VLE), to the premises of Smart Learning must be applied in the smart class. For data collection, the researcher uses approaches from many publications and books.

4.1 Machine Learning

Machine regards to changes in learning pattern, structure, program that should enhance the performance& improves the

students' quality in the teaching & learning phenomenon. For example, the addition of a database record within the province of another subject that must be better understood in order to be considered learning. As a result, after hearing multiple examples of a person's speech, the performance of a speech-recognition system increases, and it is reasonable to conclude that the machine has learned.

The term "machine learning" refers to a device that conducts Artificial Intelligence-related tasks. Although the responsibilities include recognising, diagnosing, planning, and robot control, among others. The new system is introduced quickly, and the quality is improved. This particular agent detects and models its surroundings, then calculates appropriate actions, possibly by anticipating their consequences. Changes to any of the components depicted in the diagram could be considered learning. Of course, the importance of machine learning has already introduced the achievement of learning & also helps to a better quality of smart education. The machine is able to cope with the structure of the internet that proceed to correct outputs of the huge number of sample inputs, thus the suitable function & the approximate relation between the resources.

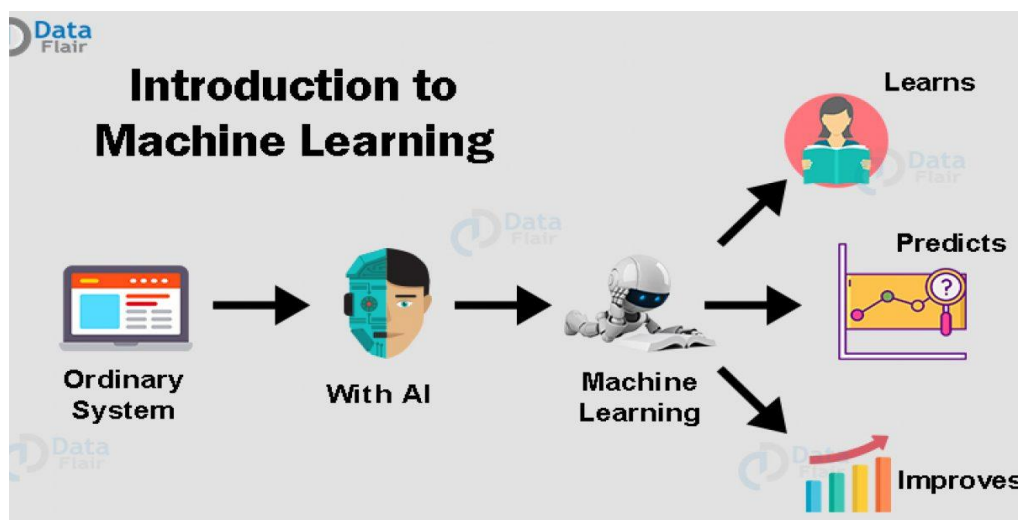


Figure 1: Impact on the Maching Learning.

Types of Machine Learning

Machine learning is categorized by the process of an algorithm learns to become more accurate in the predictions. These are as below:

- **Supervised learning** – It's a process of labeling training data & define the variables that should want to supply algorithm assess for correlation
- **Unsupervised learning** - The machine learning introduces the process algorithms that should train the unlabeled data & the algorithm scans through data sets looking for meaningful connections. These are algorithms trained & the predictions of output predetermined resources.
- **Semi – supervised learning** - The approach of a machine learning involves both of two above types. That the algorithm is mostly labeled trained data & the model is free to explore the data & to develop the interpretation of the data set.
- **Reinforcement learning** - This is used to teach a machine to complete a multi-step process for the clear

definition of rules. The data, scientists program an algorithm to complete a task & give it positive or negative cues to the work is completed.

4.2 Smart Education

Smart Learning is a phase of introducing the application of technology in the classroom environment. It is not only required to establish the classroom infrastructure; it is also necessary to demonstrate that the approach accompanies the students and develops their abilities in a progressive, natural, and effective manner. Smart learning is a method of learning that uses electronic gadgets. The use of internet technologies to deliver a wide range of solutions to improve knowledge and performance is referred to as e-learning. Smart education refers to web-enhanced instructions and internet-based communication, such as email, audio and video conferencing, live streaming, and chats, that are used to carry out, facilitate, or support e-learning.

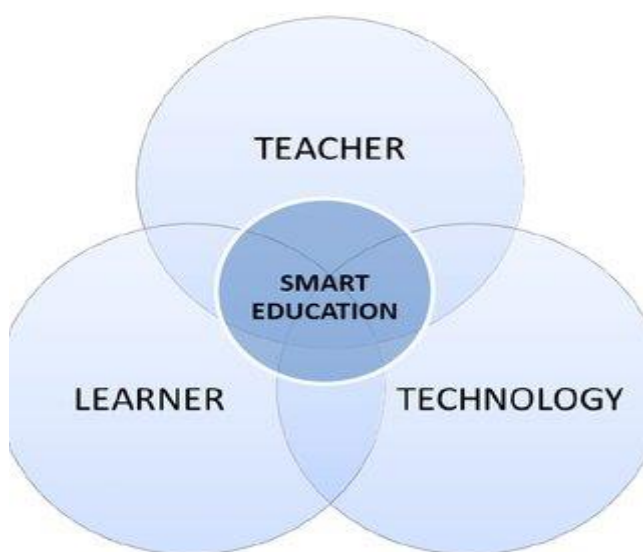


Figure 2: Impact on IOT in the Smart Learning Process.

The accrediting authorities will generally place pressure on smart education for integration. In order for higher and further education institutions to remain competitive, effective technological integration in the classroom must be ensured. As a result, instructional approaches and standards are required to interact with digitally oriented pupils in our classrooms. Smart education introduces more advanced learning tools and encourages participation through creative teaching methods. Smart Education will provide a library with an integrated database incorporating three core sub-systems: 'Electronic Bookshelves,' which automates access to the bookshelves; 'Virtual White Space,' which allows library patrons to discuss information and discoveries; and 'Innovation and Social Network Database (ISNB),' which disseminates and stores new ideas and concepts.

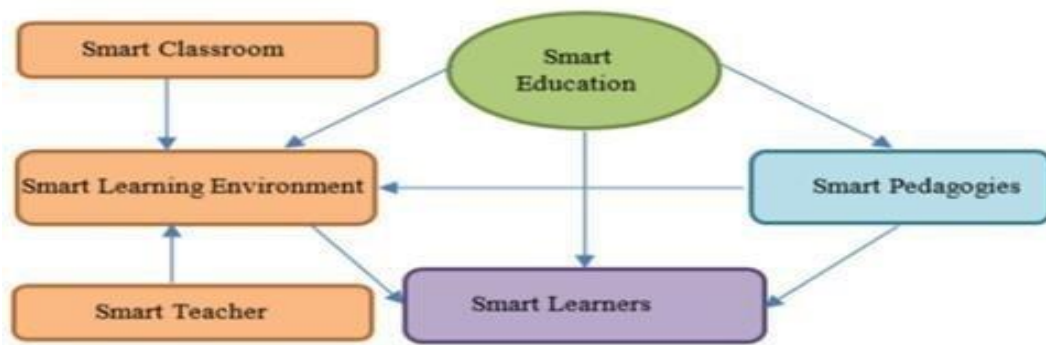


Figure 3: Smart Education System through the Machine Learning.

The machine learning has put some capacity that upgrades the students quality, teacher efficacy as well as to improve the educational environment. The methodology highlights the student with their satisfactory implicit and explicit information that should improve the intra and interpersonal information arrange by utilizing hubs in the apparatus. The new era of technology learns by the teacher efficacy. Due to the impact of machine learning draw a collaborative framework for smart learners with smart gadgets. Therefore, it's a better time to start building a smarter education system to enrich the student-centric, digital, collaborative approach of machine learning that should be prepared the next generation to participate in the digital economy.

4.3 IOT Base Education (Internet of Things)

It refers to the ever growing network of physical things or objects around the hold of IP address for the internet connectivity & the communication that occurs between these connected objects & other internet enabled devices & system. Few impacts of IoT due to the machine learning, are

- The learner is part of the learning system as an entity
- Continuous tracking of learner by the system
- Continuous update to the learners.

IoT connects the machine through the online platform due to the learning resource associates with the teachers & learners. IoT connects the internal education system as well as the global point through the gain of knowledge of the learners. The learner can use the advanced materials or resource to applying their experiments of learning. IOT enables students to find answers to their questions by connecting to the vast amount of data kept on the internet, ensuring the smooth operation of the e-learning process. The IP address scheme practically establishes how devices that can highlight IP can communicate with one another and with the physical or virtual world. This is a built cosmic database metric that is linked between the objects. It ensures that robots and software assist students in remotely accessing data at any time and from any location. IOT, in practise, removes existing electronic obstacles, time constraints, and other barriers between learners, as well as a significant number of resources such as experienced teachers, research and solution findings, and advanced tools. In a matter of seconds or minutes, students or teachers can gain access to the material. As a result, it appears that IOT is to blame for infusing Machine Learning tools with a high-tech dimension of resources (cloud system) in order to collect knowledge linked with learner potency.

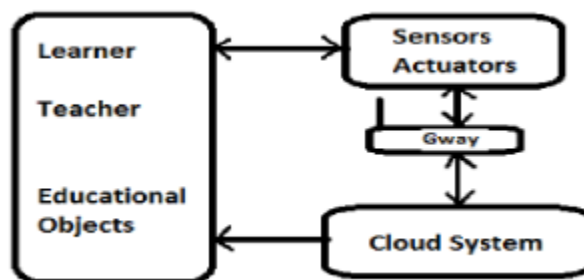


Figure 4: IOT in Educational Architecture

4.4 Smart Classroom

In 21st Century educational technology plays a vital role in a classroom environment. So, the general classroom is often considered due to the ICT based equipment that is called 'Smart Classroom'. A smart class is consisting the new era of high tech components. Which is impacted by the digital teaching & learning process, associates with the various components of hardware & software modules. A smart classroom uses the new trends of technologies like projectors, laptops, smart phones, smart boards, DVD, document camera all kinds of machine relate to a new trends of digital learning sections. Students & teachers can more satisfy with lecture, presentations and conversations by the smart classroom, using the machine tools in the learning process for their betterment of efficacy. IOT transform the standard & effective classrooms due to the smart classroom & to modify a better voice, conversation, movements, & behavior. A smart class follows the systems are hosted through the internet facilities & high tech device providers. Smart classroom rapidly changed the way of teaching and learning in schools. As a result, the student should enrich their complex and challenging concepts by seeing visuals and animations that make studying fun for them. With the use of cutting-edge assessment technology, teachers may examine and evaluate the learning of their students in the classroom. The Smart class contains two system application components. These are:

- System surveillance – It refers to the collection of data from smart classrooms via machine and storage in the cloud for future viewing.
- System attendance - To store the students' data due to their class performance regularly through the digital way.
- Hence, to show that the setting of machine learning permits the teachers & students both of them connect to digital resources & engage in an active learning system by the new trends of the smart classroom.

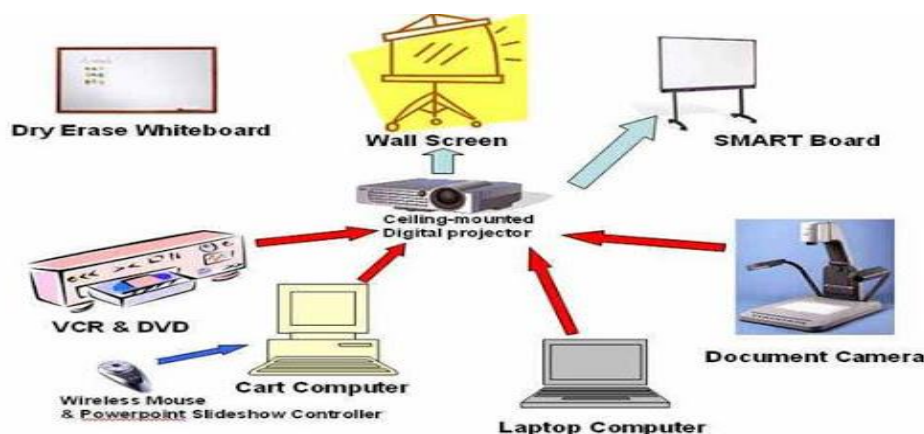


Figure 5: Smart Class as a Smart Education.

5. RESULTS & DISCUSSION OF THE STUDY

The qualitative research paradigm shows the result regards the machine as a learning tool in a smart classroom. The result shows that a machine as an effective tool in the present scenario for the smarter classes. It helps to students & teacher both of them to enrich their potentialities. Machine learning assists to successfully integrate the IOT device to connect the smart classes. The study recognizes the effectiveness of smart classes due to the IOT base education. The result point out the variables are significantly correlated with each others. Therefore, it defines a machine as an effective tool in teaching & learning paradigm & also positively correlated with the smart education. The result supervises that the super fast technological tool highly impacted by the device generates learning strategies & smart education. Therefore, it refers to the machine as a productive learning tool for the smart class as well as smart education.

6. FINDING OF THE STUDY

A framework of a study finds out the integration of machine & education are interrelated with each other. In referring to machine learning is creating new provocation & opportunities for smart education. A device used to huge volume of data stored & collects in every moment & integrate into the educational setting. Smart education refers to the determination of learning styles should be used the learning content adapt & push the different area of the students' based learning styles. In a newly adopted area of the technological tool should affect the teachers & students' key point of efficacies. Smart Education ensures the concept of relevant systems that have been implemented in the performance of students' As a result, the machine is referred to as a useful instrument in the future of education. Smart education is an activity that can be done anywhere and at any time, and it takes learning outside of traditional classrooms. Some of the gadgets that can be utilised are internet enabled watches to listen to recorded lectures, and IOT enabled to customise learning content that might be text, graphics, or multimedia.

7. CONCLUSIONS

The world is changing rapidly and at the same time the teaching-learning systems. Technology and different types of learning tools are being used by the modern educator in their smart classroom. Therefore it can be best to say that machine tools innovate within our existing workflow. Artificial Intelligence and Machine Learning have become popular jobs for many people as a result of the fast technological surge in the IT and development industry a few years ago. Furthermore, understanding how the various machine learning technologies interact with one another and with one another will be an important part of your overall decision-making process. Most importantly, it will play a critical role in ensuring that you stay ahead of the curve in comparison to your peers.

We presented machine learning in smart education in this chapter and demonstrated how teachers use smart education in their smart classrooms with the help of technology. Finally, machine learning methods may be used to create models that can evaluate larger, more complicated datasets and provide faster, more accurate answers. People from several industries have benefited from the machine learning method. Machine learning tools can effectively alleviate the annoyances. These tools can assist the student by giving efficient software development solutions tailored to their needs.

8. REFERENCES

1. About.gooru.org. (2017). Our Mission: <http://about.gooru.org/mission>
2. Brynjolfsson, E., and Mitchell, T. (2017). What can machine learning do? Workforce implications. *Science* 358, 1530–1534.

Do i: 10.1126/science.aap8062

3. Chopra, R. (2018). *Machine learning*. (1st ED). ISBN- 13 : 978-9386173423 : Khanna Publishing.
4. Enthem, A.(2015). *Introduction to Machine Learning*. (3rd ED). ISBN- 13: 978-8120350786 : PHI Learning Pvt. Ltd.
5. Essinger, S., & Rosen, L.S. (2011). *An introductory study on the use of technology by students in secondary education*. <https://www.researchgate.net/publication/224226439> Doi: 10.1109/DSP-SPE.2011.5739219
6. Medium. (2017). *The Future of Education: How A.I. And Immersive Tech Will Reshape Learning, Forever*. <https://medium.com/futurepi/a-vision-for-education-and-its-immersive-a-i-driven-future-b5a9d34ce26d>.
7. Obermeyer, Z., and Emanuel, E. J. (2016). *Predicting the future-big data, machine learning, and clinical medicine*. *New Engl. J. Med.* 375:1216. Doi : 10.1056/NEJMp1606181
8. Shwartz, S.S., & David, B.S. (2015). *Understanding Machine Learning:From Theory to Algorithms*. (3rd ED). ISBN- 13 : 978-1107512825 : Cambridge University Press.
9. Srinivasaraghavan, A., & Joseph, V. (2019). *Machine Learning*. ISBN- 13: 978-8126578511 : Wiley.
10. Tezci, E. (2011). *Factors that influence preservice teachers' ICT usage in education*. *European Journal of Teacher Education*, 34, 483-499.
11. Nguyen, Dongthi Thao, and Thu Chung Kieuthi. "New Trends In Technology Application In Education And Capacities Of Universities Lecturers During The Covid-19 Pandemic." *International Journal of Mechanical and Production Engineering Research and Development (IJMPERD)* 10 (2020): 1709-1714.
12. Muzamil, Gazi Tareq. "Application of E-Learning Tools in Teaching English to Undergraduate Students." *International Journal of English and Literature (IJEL)* 5.3, Jun 2015, 41-46
13. Mudassir Khan, Mohd Ayyoob. "The scope of E-learning in the computer science & technologies." *International Journal of Computer Science Engineering and Information Technology Research (IJCSEITR)* 6.6 (2016): 93-98.